

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-45

Name: Bear Butte Lake

County: Meade

Legal description: T 6 N, R 7 E, Sec. 25 & 30

Location from nearest town: 4 mi. W, 2.5 mi. N of Sturgis, SD

Dates of present survey: June 12-14, 2012

Date last surveyed: June 6-8, 2011, September 13, 2011

Management classification: Warmwater semi-permanent

Primary Species: (game and forage)

1. Largemouth Bass
2. Yellow Perch
3. Black Crappie
4. Northern Pike

Secondary and other species:

1. Green Sunfish
2. Fathead Minnow
3. Walleye
4. Black Bullhead

PHYSICAL CHARACTERISTICS

Surface Area: 180 acres

Watershed: 2,000 acres

Maximum depth: 13 feet

Mean depth: 7 feet

Lake elevation at survey (from known benchmark): Two feet below full pool

Ownership of lake and adjacent lakeshore property:

The lake and lakeshore are owned by the South Dakota Department of Game, Fish and Parks. Bear Butte State Park manages the lakeshore property adjacent to the lake.

Fishing Access

Bear Butte Lake is surrounded by a state park which provides public access to the entire shoreline (Figure 1). A gravel road, 203rd Street, runs adjacent to the north side of the lake and provides access to a concrete plank boat ramp on the northeast side of the lake, a picnic/parking area on the north central side and a fishing pier and campground on the northwest side of the lake. A smaller, unnamed gravel road provides access to the south side of the lake.

Observations of Water Quality and Aquatic Vegetation

Emergent vegetation is present in varying amounts, especially in the east side, consisting mostly of cattail. Submerged vegetation is excessive from mid summer to freeze up with lots of clasping leaf and sago pondweed.

Observations on condition of all structures, i.e. spillway, level regulators, boat ramps, etc.:

The boat ramp is a concrete plank ramp, very rough and shallow. No other structures were inspected for condition.

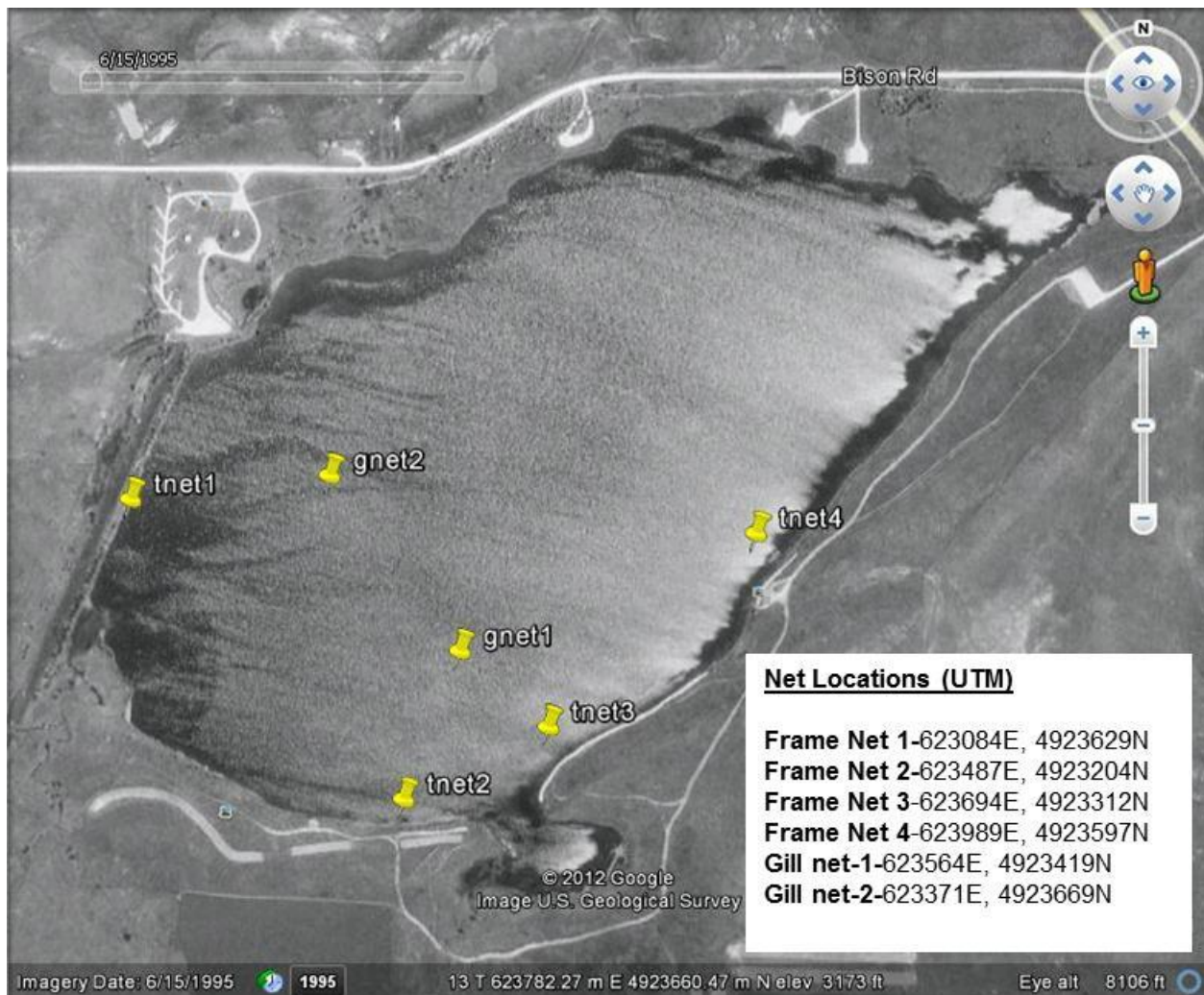


Figure 1. Locations, including GPS points, of experimental gill (gill) and modified fyke (frame) nets during the annual fishery survey of Bear Butte Lake, Meade County, South Dakota, 2012.

CURRENT MANAGEMENT OBJECTIVES, STRATEGIES AND ACTIONS

- Objective 1.** Maintain Largemouth Bass PSD between 40 and 70 and maintain Bluegill, Black Bullhead, Yellow Perch and Black Crappie PSD's at 20 or greater.
- Objective 2.** Provide Channel Catfish to add to angler opportunity.
- Objective 3.** Provide Northern Pike to add to angler opportunity
- Objective 4.** Annually provide catchable Rainbow Trout to add to winter angler opportunity.

BIOLOGICAL DATA

Sampling Effort and Catch

Adult Fish survey

Sampling at Bear Butte Lake consisted of eight modified fyke (frame) nets consisting of a 1.3 X 1.5 m frame, 19.1 mm (0.75 in) mesh and a 1.2 X 23 m (3.9 X 75.5 ft) lead and one experimental gill (gill) net (45.7 m [150 ft] long and 1.8 m [6 ft] deep with six 7.6 m [25 ft] panels of bar mesh sizes: 12.7 mm [0.5 in], 19.1 mm [0.75 in], mm [1.25 in], 38.1 mm [1.5 in], and 50.8 mm [2.0 in]) (Figure 1). Frame nets were set at four stations and fished overnight, then reset and fished overnight again. No boat electrofishing was conducted in 2012 due to the decreased water level, making the boat ramp unusable. Discussion on selected fish species follows and completes this report.

Table 1. Species, number captured (N), catch per unit effort (CPUE), catch per net night of stock-length fish (CPUE-S), proportional stock density (PSD) and proportional stock density of preferred size fish (PSD-P) and relative weight of stock length or greater fish ($Wr \geq S$) from all species collected in eight modified fyke nets in in Bear Butte Lake, Meade County, South Dakota, June 12-14, 2012. CPUE values with 80% confidence intervals in parentheses. PSD, PSD-P and $Wr \geq S$ values with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	$Wr \geq S$
Black Bullhead	6,060	757.5 (223.6)	757.5 (223.6)	0	0	--
Black Crappie	986	123.3 (16.3)	123.3 (16.3)	91 (2)	0	107.6 (0.8)
Northern Pike	4	0.5 (0.5)	0.5 (0.5)	--	--	88.1 (2.3)
Yellow Perch	64	8.0 (2.8)	8.0 (2.8)	55 (11)	2 (2)	83.2 (0.9)
Total	7,114					

Table 2. Species, number captured (N), catch per unit effort (CPUE), catch per net night of stock-length fish (CPUE-S), proportional stock density (PSD) and proportional stock density of preferred size fish (PSD-P) and relative weight of stock length and greater fish ($Wr \geq S$) from all species collected in one experimental gill net in Bear Butte Lake, Meade County, South Dakota, June 12-14, 2012. CPUE values with 80% confidence intervals in parentheses. PSD, PSD-P and $Wr \geq S$ values with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	$Wr \geq S$
Black Bullhead	142	142.0	138.0	0	0	91.2 (2.0)
Black Crappie	7	7.0	7.0	--	--	113.0 (5.6)
Channel Catfish	13	13.0	13.0	100	15 (19)	88.7 (3.4)
Largemouth Bass	1	1.0	1.0	--	--	111.3 (--)
Northern Pike	2	2.0	2.0	--	--	95.4 (8.1)
Yellow Perch	3	3.0	3.0	--	--	78.3 (13.7)
Total	168					

Black Bullhead

Black Bullhead were the dominate species sampled in 2012. Removal efforts in 2011 appear to have decreased Black Bullhead density as mean catch per unit effort (CPUE) declined from 1,948.5 in 2011 to 757.5 in 2012 (Table 1). Gill net CPUE was 142 bullheads (Table 2). Similar to results from sampling in 2010 and 2011, size structure was low, with no fish sampled over preferred-length (Figure 2).

All Black Bullhead sampled in 2012 were removed from the lake in an effort to reduce density. Stockings of Largemouth Bass, Channel Catfish, Walleye and Northern Pike have been completed the past few years in an effort to increase densities of predatory fish and in hopes of increasing the predatory pressures on the Black Bullhead population.

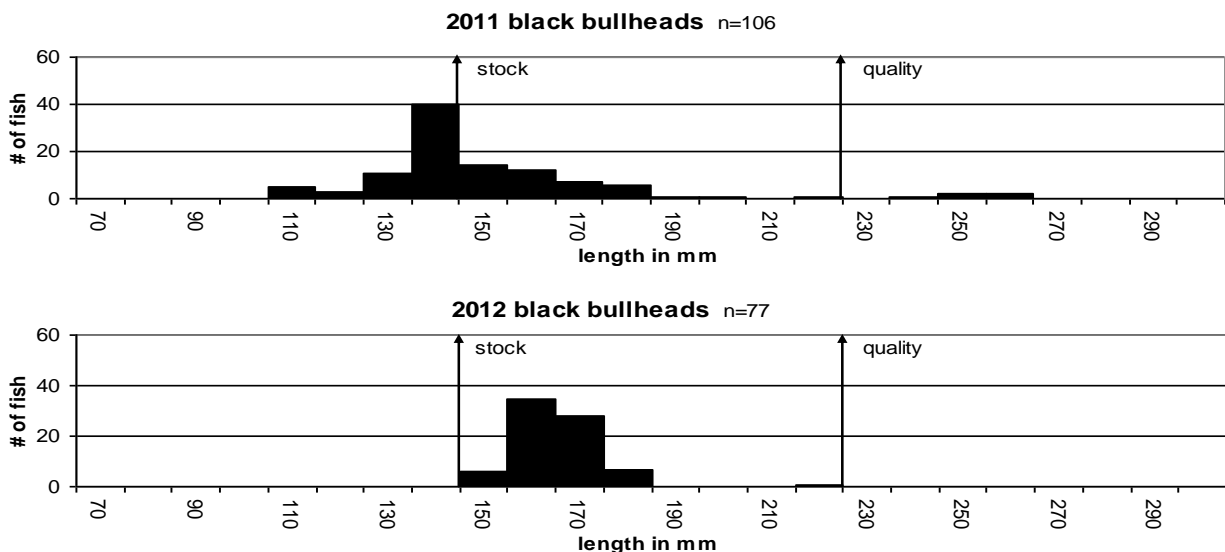


Figure 2. Length frequency histograms of Black Bullhead collected from modified fyke nets in Bear Butte Lake, Meade County, South Dakota, 2011-2012.

Black Crappie

In 2008, 230 adult Black Crappie were stocked in an effort to re-establish the population. In 2012, CPUE was 123.3 (Table 1), compared to 97.8 last year. Fish condition was good with a relative weight for stock length and larger fish ($W_r \geq S$) of 107.6. Size structure has improved with a proportional stock density (PSD) of 91, up from 23 in 2011. The Black Crappie population has grown to a size large enough to provide a quality fishery at Bear Butte Lake (Figure 3).

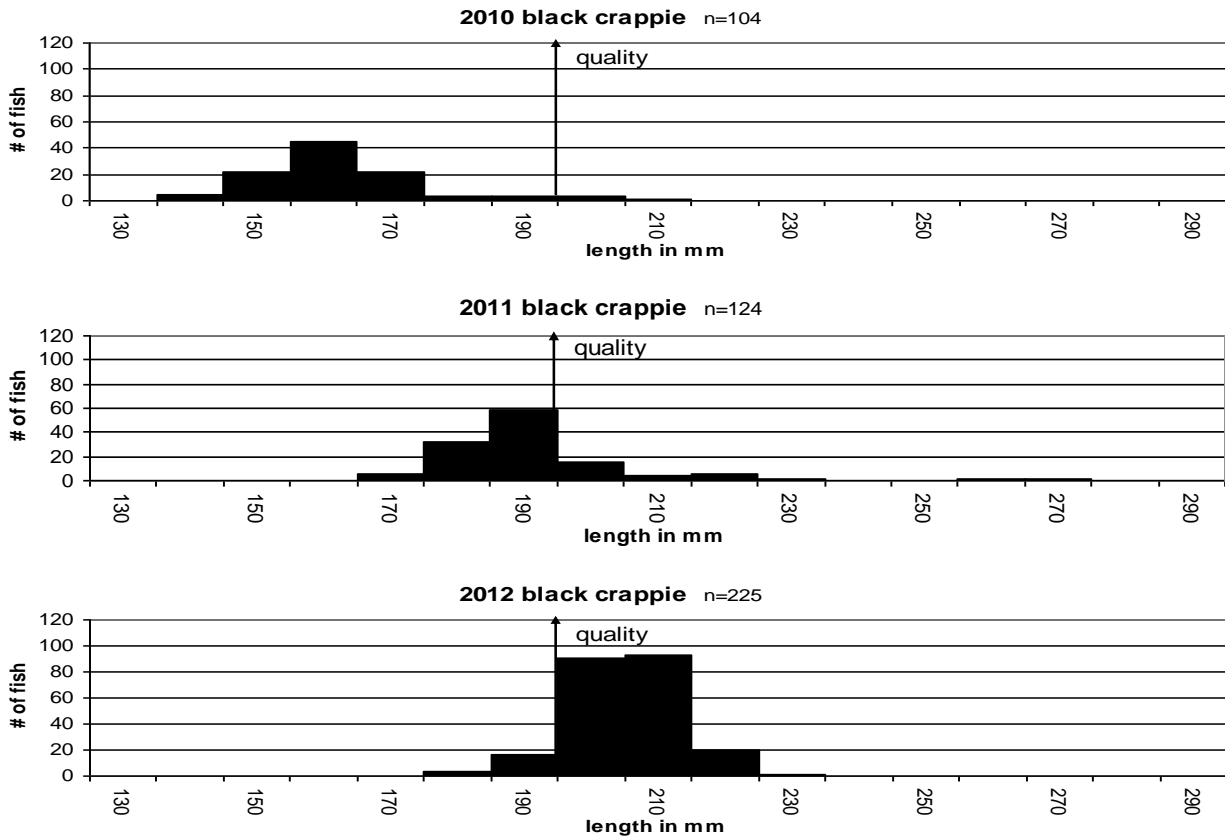


Figure 3. Length frequency histograms of Black Crappies sampled from Bear Butte Lake, Meade County, South Dakota, 2010-2012.

Yellow Perch

In 2009, 1,400 pre-spawn adult Yellow Perch were stocked in an effort to re-establish the population. In 2012, trap net CPUE was 8.0 (Table 1), compared to 16.8 in 2011. Size structure appears to have improved slightly from last year (Figure 4). Stock density values from the trap net sample were PSD of 55 and a PSD-P of 2. Fish condition was low, with a $Wr \geq S$ of 83.2, which may be a result of interspecific competition with the abundant Black Bullhead and Black Crappie populations.

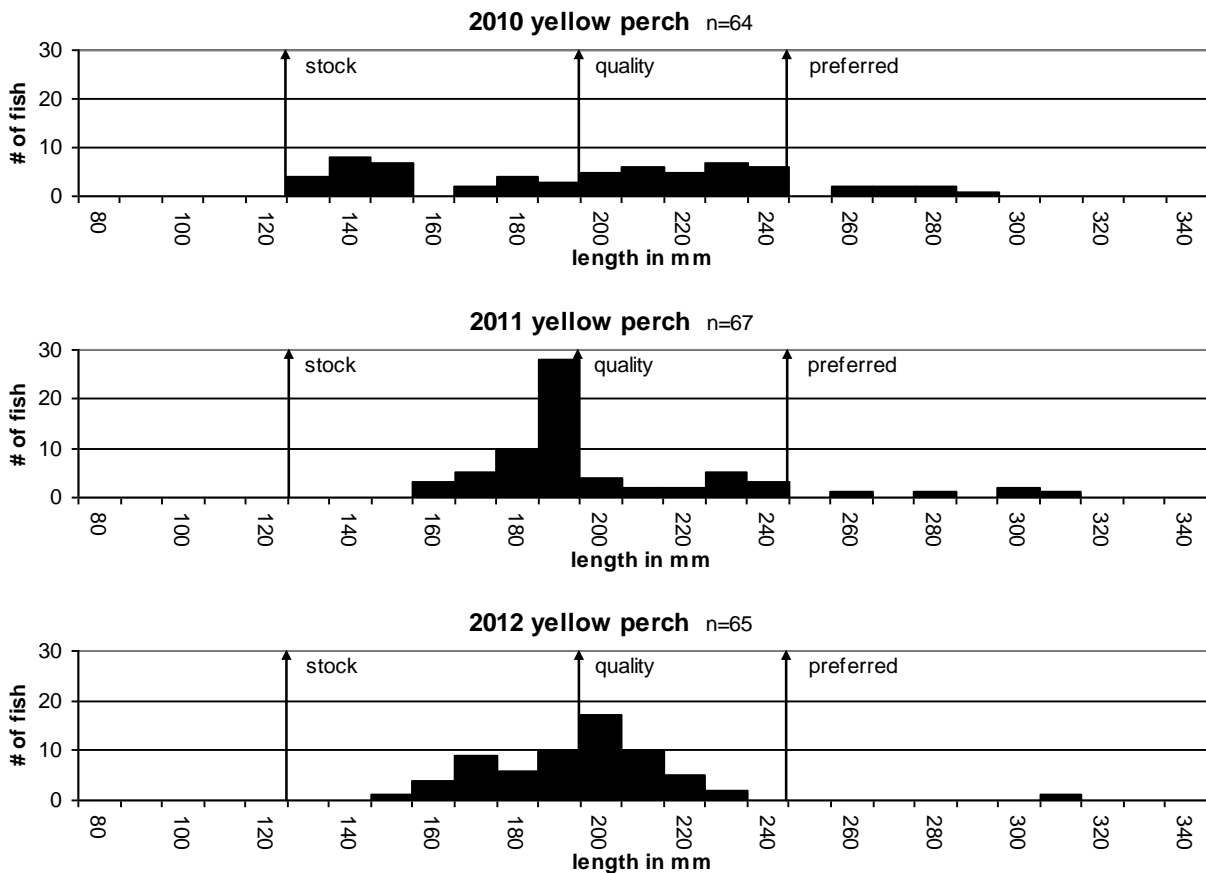


Figure 4. Length frequency histograms for Yellow Perch sampled from the modified fyke nets in Bear Butte Lake, Meade County, South Dakota, 2010-2012.

RECOMMENDATIONS

1. Continue to remove Black Bullheads and monitor fish populations annually until management objectives have been achieved.
2. Begin stocking Rainbow Trout in November 2013 to add to ice angling opportunity.

APPENDIX

Appendix A. Stocking history, including year, number, species and size of fish stocked in Bear Butte Lake, Meade County, South Dakota, 2008-2012.

Year	Number	Species	Size
2008	230	Black Crappie	Adult
	2,400	Fathead Minnow	Adult
	5,620	Largemouth Bass	Fingerling
2009	500	Yellow Perch	Adult
	570	Channel Catfish	Adult
	13,000	Largemouth Bass	Fingerling
2010	50	Golden Shiner	Adult
	900	Yellow Perch	Adult
	20,000	Walleye	Fingerling
	110	Northern Pike	Adult
2011	77,600	Northern Pike	Fry
	200	Channel Catfish	Adult
	700	Yellow Perch	Adult
	10,000	Largemouth Bass	Fingerling
	150	Largemouth Bass	Adult
2012	341	Yellow Perch	Adult
	350	Largemouth Bass	Adult